20. (NOT AMENDED) A method of hybridizing a microarray of oligonucleotides bound to an adsorbed polymer surface on a siliceous substrate with a nucleic acid material comprising the step of:

incubating the nucleic acid material with the microarray of oligonucleotides on the adsorbed polymer surface in a hybridization solution at a hybridization temperature ranging from about 55°C to about 70°C so as to hybridize the nucleic acid material,

wherein the hybridization solution comprises a buffer composition that comprises a pH within a range of pH 6.4 to 7.5, a non-chelating buffering agent that maintains the pH within the pH range, and a monovalent cation in a monovalent cation concentration ranging from about 0.01 M to about 2.0 M.

21. (NOT AMENDED) The method of Claim 20, wherein in the step of incubating, the non chelating buffering agent is selected from a group consisting of 2-[*N*-morpholino]ethanesulfonic acid (MES), 3-(*N*-Morpholine)propanesulfonic acid (MOPS), Piperazine-*N*,*N*'-bis(2-ethansulfonic acid (PIPES), Tris(hydroxymethyl)aminomethane hydrochloride (TRIS-HCl), Hydroxyethylpiperazine-*N*'-2-ethanesulfonic acid (HEPES), and *N*-Tris(hydroxymethyl)methylglycine (TRICINE).

22. (NOT AMENDED) The method of Claim 20, wherein in the step of incubating, the monovalent cation is selected from a salt consisting of one or more of LiCl, NaCl and KCl and the monovalent cation concentration ranges from about 0.1 M to about 2.0 M.

23. (NOT AMENDED) The method of Claim 20, wherein the adsorbed polymer surface comprises a polycationic polymer.

24. (NOT AMENDED) The method of Clam 23, wherein the polycationic polymer is selected from a group consisting of one or more of polyethylenediamine, poly-acrylamide, poly-L-arginine, poly-L-histidine, and poly-L-lysine.

25. (NOT AMENDED) The method of Claim 20, wherein in the step of incubating, the buffer composition further comprises a chelating agent selected from a group consisting of one or more of ethylenediaminetetraacetic acid (EDTA), trans-1, 2-diaminocyclohexanetetraacetic acid (CDTA) and diethylenetriaminopentaacetic acid (DTPA) that has a chelating agent concentration of less than about 100 μM.

26. (NOT AMENDED) The method of Claim 20, wherein in the step of incubating, the buffer composition further comprises an ionic surfactant selected from a group consisting of one or more of sodium dodecyl sulfate (SDS), lithium lauryl sulfate (LLS), N-lauryl sarcoside, acylated polypeptides, linear alkybenzene sulfonates, lignin sulfonates, paraffin sulfonates, sulfosuccinate esters, alkylnaphthalene sulfonates, isethionates, alkanolamine condensates, and N-alkylpyrrolidones, and wherein the step of incubating comprises using a hybridization chamber, and the ionic surfactant is provided in an amount sufficient to wet surfaces of the hybridization chamber and loosen bubbles impinged on the surfaces of the hybridization chamber.

27. (NOT AMENDED) The method of Claim 26, wherein the amount of ionic surfactant is a surfactant concentration ranging from about 0.01% to about 0.2% (w/v).

28. (NOT AMENDED) The method of Claim 20, wherein the buffer composition has a total cation concentration of about 0.02 M to about 2.0 M.

29. (NOT AMENDED) The method of Claim 20, wherein in the step of incubating, the non chelating buffering agent is 2-[*N*-morpholino]ethanesulfonic acid (MES), the monovalent cation is LiCl, the monovalent cation concentration is greater than or equal to 300 mM, the pH is within the range of pH 6.6 to 6.8.

30. (NOT AMENDED) The method of Claim 29, wherein in the step of incubating, the buffer composition further comprises one or both of a chelating agent ethylenediaminetetraacetic acid EDTA having a chelating agent concentration of about 50 μM, and an ionic surfactant selected from sodium dodecyl sulfate (SDS), lithium lauryl sulfate (LLS) having a surfactant concentration that ranges from about

0.02 % to about 0.1 % (w/v), and the buffer composition has a total cation concentration of about 750 mM.

31. (NOT AMENDED) The method of Claim 20, before the step of incubating, further comprising the step of combining the nucleic acid material with the buffer composition.

32. (AMENDED) The method of Claim 20, after the step of incubating, further comprising the step of interrogating the hybridized microarray at a first location, the first location being a physical location either where the incubation of the microarray is performed or another location separate from the microarray incubation location.

33. (NOT AMENDED) The method of Claim 32, further comprising the step of transmitting data representing a result of the interrogation.

34. (AMENDED) The method of Claim 33, further comprising the step of receiving the transmitted data at a second location, the second location being a physical location that is different from one or both of the first location where the microarray interrogation is performed and the microarray incubation location.

35. (AMENDED) The method of Claim 34, wherein the first location is remote from the second location, the remote first location being physically separated from the second location.

50. (AMENDED) A method of performing a high temperature hybridization assay comprising the step of:

incubating a nucleic acid material with a microarray of oligonucleotides in a hybridization solution at a hybridization temperature ranging from about 55°C to about 70°C so as to hybridize the nucleic acid material,

wherein the microarray comprises a siliceous substrate with an adsorbed polymer surface and oligonucleotides bound to the adsorbed polymer surface, and